

SIX MORE NEW SPECIES OF *LACHENALIA* (LILIACEAE)

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ABSTRACT

Six new species of *Lachenalia* are described, and the characters of the ripe seeds are used as additional diagnostic features in the genus.

UITTREKSEL

'N VERDERE SES NUWE *LACHENALIA*-SOORTE (LILIACEAE)

Ses nuwe *Lachenalia*-soorte word beskryf en die eienskappe van die ryp sade word as aanvullende onderskeidende kenmerke in die genus voorgestel.

Key words: *Lachenalia*, sp. nov., Liliaceae, South Africa, seed, diagnostic characters.

INTRODUCTION

The six new species described all have seeds with terminal ridged arils of various lengths. Three of the species, *L. zebrina*, *L. nordenstamii* and *L. whitehillensis*, have a number of features in common, such as the single banded leaf, campanulate flowers with exerted stamens, and in the case of the two former the seeds are the largest in the genus, with medium-length terminal ridged arils and extruded micropyles. In *L. ameliae* the seed is very small, with a medium ridged aril, the flowers are urceolate and the leaves often have an integument of hairs on the upper surface. *L. giessii* and *L. moniliformis* have seeds which are very small with an almost obsolete terminal ridged aril. *L. giessii* is confined to the south western area of South West Africa/Namibia, while *L. moniliformis* is unique in having many filiform leaves with a beaded appearance, and is only known from the type locality near Worcester, where it was discovered as recently as 1978.

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FIG. 1.

Lachenalia zebrina: 1. Outer perianth segment and stamen; 2. Inner perianth segment; 3. Gynaecium; 4. Ripe capsule; 5. Capsule from above; 6. Seed (Compton 3536).

Lachenalia zebrina Barker, sp. nov.; folio solitario, conduplicato vel canaliculato, falcato vel lanceolato, supra glauco, subter fasciato marronino, basi amplexi atropurpurenti, distinguitur.

Inflorescentia racemosa; pedicelli longi vel breves, patentes. *Flores* cernui, curti campanulati, basim truncatam; segmenta externa ovalia, eburnea suffusa viridia vel brunnea, apices recurvatos; segmenta interiora leviter longiora vel segmenta externa; stamina manifeste exerta. *Capsula* grandis, inflata, oboviodea. *Semen* magnum, elongatum, plerumque curvatum; arillus porcatus, terminalis; micropyle manifeste exertus, porcatus, arillum aequantes.

Type Material: Cape Province—3320 (Montagu): Karoo Garden, Whitehill (-BA), 17/9/1945, Compton 17392 (NBG, holo., BOL, iso.).

Plant up to 300 mm, usually less. *Bulb* globose to obovoid 10–30 mm diam.; outer tunics often spongy, light brown. *Leaf* one, blade 60–220 mm long, 20–60 mm broad, falcate to lanceolate, conduplicate or channelled, glaucous green above, banded with maroon below, margin often undulate, clasping base, silvery-white with maroon bands above shading to magenta at base. *Inflorescence* racemose, 60–105 mm long, 20–60 mm diam., few- to many-flowered, lax to dense, pedicels 2–20 mm long, often shorter toward the base, spreading, flowers cernuous, bracts minute, membranous, narrow lanceolate. *Flowers* small, cream tinged with green or brown, 4–6 mm long, tube a flat disc 2 mm diam.; outer segments 4–6 mm long, oblong with apex recurved; inner segments slightly longer, narrower with recurved apex; stamens cream, well exserted, up to 8 mm long; ovary ovoid 1–2 mm diam., green; style 4–8 mm long. *Capsule* membranous, globose to obovoid up to

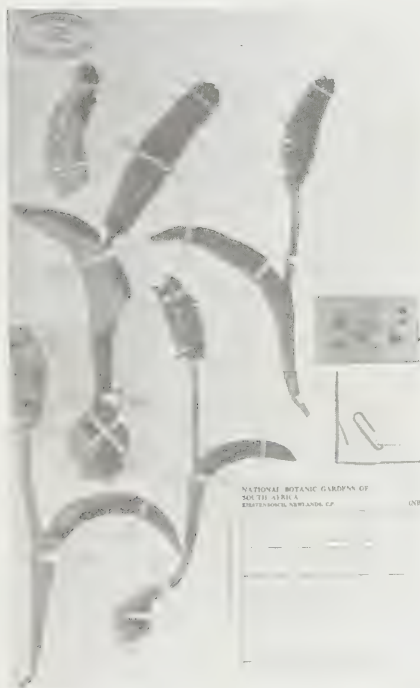


FIG. 2.

Lachenalia zebrina: forma *densiflora* (Thomas s.n. sub NGB 105714).

10 mm diam., winged; seeds large, elongate, curved, aril ridged, terminal, medium length, micropyle extruded, ridged, as long as aril.

DIAGNOSTIC CHARACTERS

Lachenalia zebrina is characterised by its single, usually falcate, conduplicate or channelled, banded leaf which is glaucous green above; by its racemose inflorescence; and flowers which are truncate at the base; with the tube reduced to a small flat disc; by its large, inflated capsule, which is one



FIG. 3.

Lachenalia zebrina: 1. Seed side view; 2. Seed from above; 3. Seed from below (Compton 21939).

of the largest in the genus; and its comparatively large curved seed, with a medium length ridged aril and an extruded ridged micropyle of equal length.

Lachenalia zebrina Barker, sp. nov. forma **densiflora** Barker forma nov.; a forma typica, inflorescentia densa, pedicellis brevibus et floribus patentibus, differt.

Type Material: Cape Province—3119 (Calvinia): 23 mls N of Downes on Klipwerf road (-BD), 2/10/1974, *Thomas s.n.* sub NBG 105714 (NBG, holo.).

It differs from the typical form in its more numerous flowers with short pedicels, forming a dense narrow inflorescence.

It is not possible to separate forma *densiflora* geographically on its distribution pattern, but it is such a variable species that it is considered useful to designate the two extremes of the graduated sequence.

Specimens of *Lachenalia zebrina* have previously been included in the species *Lachenalia anguinea* Sweet, and in 1930 it was mistakenly illustrated under that name, in the *Journal of The Botanical Society* XVI Plate II pp. 10–12. However, recently, when a study was made of the capsules and ripe seeds of the two taxa, it was found that the plants which occur in the coastal

areas of the western Cape, had a small obovoid capsule containing very small, ovoid seeds with a minute ridged, terminal aril, and the flowers had a distinct tube which narrowed towards the base. The capsules of the plants occurring in the Karoo areas were very large, inflated and globose, and the seeds were very much larger, elongated, curved, with a ridged terminal aril of medium length, and an extruded, ridged micropyle of about the same length as the aril, while the perianth was truncate at the base.

These taxa are now considered to represent two distinct species, separated geographically. The plants from the sandy coastal areas of the western Cape, extending from Piketberg in the south to the Richtersveld in the north, agree with Sweet's illustration in Sweet's *British Flower Garden* I t. 179 (1838), which represents the iconotype of *L. anguinea* Sweet. The laid-out flower is depicted with a distinct tube.

The plants, which are widely distributed in the Karoo from Matjiesfontein in the south, to the Knersvlakte in the Vanrhynsdorp district in the north, and eastwards to the Carnarvon, Williston, and Sutherland districts, are extremely variable in the width of the leaves and the shape of the inflorescence, but are all grouped under the new name *Lachenalia zebrina*.

In the typical form the inflorescence is very lax with long pedicels to the flowers, which are cernuous; in forma *densiflora* the flowers are much more numerous and congested, with comparatively short pedicels and the flowers are spreading, producing a dense, narrow elongated head, which gives the plant a distinctive appearance. However, intermediate variations occur which connect the two extremes.

The specific name was suggested by the resemblance of the striped, falcate leaf to the hind leg of a zebra.

L. zebrina Barker forma *zebrina*

SPECIMENS EXAMINED

CAPE PROVINCE—3022 (Carnarvon): Carnarvon (-CC), *Pillans s.n.* Hort. NBG 3740/14 (BOL).

—3118 (Vanrhynsdorp): Farm Klipdrift, Knersvlakte (-B), 22/9/1970, *Hall* 3620 (NBG).

—3119 (Calvinia): Brandkop. NE of Nieuwoudtville (-AA), 13/9/1961, *Barker* 9484 (NBG); Near Kokerboomkop 16 mls S of Loeriesfontein (-AB), 27/9/1952, *Lewis* 2517 sub SAM 61824 (BOL, K. SAM); Between Loeriesfontein and Nieuwoudtville, 27/9/1952, *Johnson* 604 (NBG); Gannabos junction with Loeriesfontein road, 2/10/1974, *Thomas s.n.* sub NBG 105717 (NBG); NE of Nieuwoudtville on Kleindoring road (-AD), 28/9/1970, *Barker* 10765 (NBG); 30 mls NW of Calvinia (-BC), 29/10/1970, *Stayner s.n.* sub NBG 93033 (NBG); Calvinia (-BD), Sept 1914, *Macpherson s.n.* sub Hort. NBG 3693/14 (BOL); Calvinia, 1/10/1940, *Barker* 853 (NBG). —3120 (Williston): Farm Langfontein SE of Calvinia (-CA), 25/8/1975, *Hall* 4259 (NBG); Visagiesrus near Calvinia (-DA), 8/1956, *Acocks* 18894 (PRE); 39 mls SW of Williston (-D), 24/9/1954, *Acocks* 17710 (PRE).

—3121 (Fraserburg): Between Fraserburg and Carnarvon (-D), 20/9/1938, *Hafström and Acocks* 222 (PRE); 42 km W of Loxton (-DC) 29/9/1974, *Nordenstam and Lundgren* 2090 (S).

—3219 (Wuppertal): Elands Vlei, Lower Tanqua (-BC), 8/9/1921, *Marloth s.n.* sub 10461 (PRE); Gemsbokfontein, Ceres Karoo (-DB), 15/9/1973, *Hanekom* 2149 (PRE).

—3220 (Sutherland): Foot of Gannagas Pass (-AA), 29/9/1968, *Stayner s.n.* sub NBG 93587 (NBG); Top of Gannagas Pass, 29/9/1968, *Stayner s.n.* sub NBG 93586 (NBG); Hout Hoek (-CA), 13/9/1971, *Hanekom* 1574 (PRE).

—3320 (Montagu): Patats Rivier, Ceres, Karoo (-AB), 2/10/1954, *Esterhuysen* 23535 (NBG, BOL, K, PRE); Whitehill Ridge (-BA), 26/9/1926, *Compton* 3137 (BOL); Karoo Garden, Whitehill, 24/9/1929, *Compton* 3536 (BOL, NBG), 12/10/1930, *Compton s.n.* sub BOL 21939 (BOL, NBG), 22/9/1941, *Barker* 1093 (NBG), 23/10/1943, *Compton* 15240 (NBG), 17/9/1945, *Compton* 17392 (BOL, iso.; NBG, holo.); Whitehill, 20/9/1943, *Compton* 14843 (NBG); Whitehill, 18/10/1928, *J. Gillett* 1712 (STE); 2 mls NE of Matjiesfontein, 3/10/1974 (young fruit), 16/8/1976 (flowers), *S. Olivier s.n.* sub NBG 105718 (NBG); Skeiding 7 mls beyond Matjiesfontein, 10/10/1954 (fruiting), *Isaac s.n.* sub NBG 71842 (NBG); 5 km E of Matjiesfontein, 28/9/1974, *Nordenstam and Lundgren* 2080 (S).

L. zebrina Barker forma *densiflora* Barker

SPECIMENS EXAMINED

CAPE PROVINCE—3119 (Calvinia): Near Soetwater at crossroads to Botterkloof (-AD), 1/10/1973, *Barker* 10891 (NBG); 23 mls N of Downes on Klipwerf Road (-BD), 2/10/1974, *Thomas s.n.* sub NBG 105714 (NBG, holo.); Road from Farm Kleinbrak to Middlepos (-DD), 28/9/1971, *Hiemstra s.n.* sub Hort. NBG 903/1971 (NBG).

—3120 (Williston): 20 mls E of Calvinia on Brandvlei road (-AC), 27/10/1970, *Thomas s. n.* sub NBG 93871 (NBG).

Lachenalia nordenstamii Barker, sp. nov.; habitu nano, bulbo multi-tunicato, strato extimo spongioso et strato intimo fibris membranis fissis, distinguatur.

Folium solitarium, lanceolatum-falcatum, canaliculatum; supra glaucum, subter fasciato vel maculato marronino. *Pedunculus* brevis valde gracilis. *Inflorescentia* racemosa, paucifloribus. *Flores* pusilli, cernui, late campanulati; tubus brevis; segmenta aequalia. bruneola, stria media marronina; apices recurvatos. *Stamina* valde exerta; filamenta crassa, marronina patentia. *Cap-sula* grandis, obovata vel cordata, alata. *Semen* elongatum vel rectum, interdum, curvatum; arillus porcatus micropyle exertus, porcatus, arillum aequans.

Type Material: Cape Province—2816 (Oranjemund): Numees Mts. (N of Hells-kloof) Richtersveld, Namaqualand (-BD), bulbs collected 3/11/1962, flowered in cultivation 31/5/1963, *B. Nordenstam* 1739 (NBG, holo. of flowering plant); Mountain between Numees and Hellskloof, Richtersveld, Namaqualand, 4/11/1962, *B. Nordenstam* 1762 (NBG, holo. of capsules and seeds).

Plant dwarf 50–120 mm high. *Bulb* up to 20 mm diam., globose to ovate, covered with many layers of spongy tunics, produced into a neck up to 40 mm long, composed of many tunics, the inner ones split into narrow membranous fibres. *Leaf* one, 20–40 mm long, lanceolate, falcate, canaliculate, glaucous green, banded on the clasping base and lower surface with maroon bands, sometimes merging into spots towards the apex. *Peduncle* very slender, tinged with maroon, up to 25 mm long above the neck. *Inflorescence* racemose, few-flowered; bracts minute, narrow-lanceolate, membranous; pedicels short, 2–3 mm long, spreading to decurved. *Flowers* small, cernuous, widely campanulate, tube short, segments almost equal in length, 4–5 mm long, brownish with a central maroon stripe, apices recurved; stamens well exserted, up to 10 mm long, filaments comparatively stout, maroon, widely spread; style slender finally longer than the stamens. *Capsule* broadly obovate to obcordate, winged, up to 12 mm diam., 5–6 mm long, purplish; seeds large 3–3.5 mm long, 1–1.5 mm diam., usually straight, occasionally curved, aril ridged, medium, terminal, micropyle ridged, exstruded, as long as the aril.

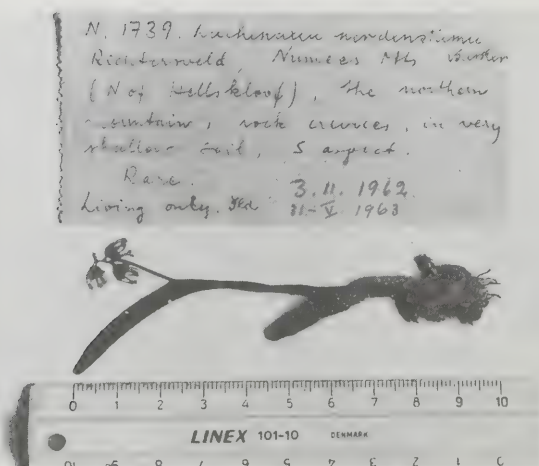
DIAGNOSTIC CHARACTERS

Lachenalia nordenstamii is distinguished by its dwarf habit, the long fibrous neck to the bulb, its single lanceolate, falcate canaliculate, banded leaf, its few-flowered racemose inflorescence, in which the short pedicels are spreading to decurved, its cernuous short widely campanulate flowers, with the stamens twice the length of the perianth, and the stout maroon filaments spreading widely. The seeds are some of the largest in the genus, distinctly longer than broad, usually straight, with a ridged aril of medium length, and an exstruded micropyle of equal length.

Two collections of bulbs of this very dwarf species were made by Dr. Bertil Nordenstam in the Richtersveld in November 1962. One of the collections was in fruit, and the capsules were preserved, and now represent the type specimens of the fruiting stage of the species. Bulbs of the second collection were grown in a pot at the Compton Herbarium, and one of these flowered on 31 May 1963. This flowering specimen was preserved and now represents the type of the species. Fortunately photographs were taken to supplement the material by Professor H. B. Rycroft, in both black and white, and colour, and these have aided considerably in describing the species. Two of these photographs are represented here.

In a recent consignment of *Lachenalia* specimens received on loan from Munich for identification, two good sheets of this species, one of flowering specimens and the other in the fruiting stage, were included. They were collected in 1977 in the south western corner of South West Africa/Namibia,

a



b



c



FIG. 4. a, b, c.

Lachenalia nordenstamii: a. Whole plant; b. Three plants (Nordenstam 1739);
 c. Capsules, seeds and old perianths (Nordenstam 1762).



FIG. 5.

Lachenalia nordenstamii: 1. Seed side view; 2. Seed from above; 3. Seed from below (Nordenstam 1762).

across the Orange River, north of the Richtersveld. They had been identified as *Lachenalia buchbergensis* Dinter, which has a similar leaf, and occurs in the same area; however in *L. buchbergensis* the flower is very distinct, it has a narrow cylindrical, sessile flower, with the stamens just emerging from the narrow mouth of the flower. The Zürich specimens are the first of *L. nordenstamii* to be recorded from SWA/Namibia, and they indicate that its distribution should be further investigated.

Lachenalia nordenstamii is closely allied to *Lachenalia zebrina* Barker sp. nov., but the latter is a much taller plant, without the fibrous neck to the bulb, the inflorescence is many-flowered and the flowers are narrowly campanulate, with slender declinate filaments. The seeds in both species are of a similar pattern, but in *L. zebrina* they are shorter and usually curved.

The distribution of the two species does not appear to overlap, as *L. nordenstamii*, as far as is known, occurs in the northern area of the Richtersveld and the southern part of SWA/Namibia, while *L. zebrina* is widespread, occurring in many parts of the Karoo. The most north westerly record of it available at present, is a collection made by Mr. H. Hall on the farm Klipdrift on the Knersvlakte, in the Vanrhynsdorp district.

The species is named in honour of Dr. Bertil Nordenstam who has done so much valuable work on the South African Flora, including some members of the Liliaceae.

SPECIMENS EXAMINED

SOUTH WEST AFRICA/NAMIBIA—2716 (Witputs): Aurus Mountain, South West Africa (-CA), 31.7.1977 (flowering), M. Müller 744 (M); Rosh Pinah und

Umgebung, Distrikt Lüderitz-Süd, South West Africa (-DD), 29/9/1977 (fruiting), *H. Merxmüller and W. Giess 32356* (M,W?).

CAPE PROVINCE—2816 (Oranjemund): Numees Mts (N of Hellskloof) Richtersveld, Namaqualand (-BD), bulbs collected 3/11/1962, flowered in cultivation 31/5/1963, *B. Nordenstam 1739* (NBG, holo. of flowering plant); Mountain between Numees and Hellskloof, Richtersveld, Namaqualand 4/11/1962, *B. Nordenstam 1762* (NBG, holo. of capsules and seeds).

Lachenalia whitehillensis Barker, sp. nov.; folio solitario, conduplicato, angusto-lanceolato vel lineari, supra veneto subter maculato vel fasciato marronino basi amplecti atropurpureiscenti, distinguitur.

Inflorescentia racemosa, angusta; pedicelli curti; flores cernui vel patent-es. Flores margaritacei vel opalescentes, campanulati, basim truncatam; segmenta interiora longiora vel segmenta externa; segmenta laterale imbricata. *Stamina* manifeste exerta. *Semen* oviodeum; arillus porcatus terminalis.

Type Material: Cape Province—3320 (Montagu): Whitehill Laingsburg Division (-BA), 20/9/1943, *Compton 14845* (NBG, holo.).

Plant up to 360 mm high. *Bulb* globose, up to 20 mm diam.; outer tunics membranous, brown. *Leaf* 1, blade narrow-lanceolate, conduplicate, up to 120 mm long, 15 mm wide blue-green, spotted or banded with maroon on lower surface, clasping base up to 80 mm long, spotted or banded with maroon shading to magenta toward the base. *Peduncle* slender, up to 140 mm long, banded or spotted with maroon. *Inflorescence* racemose, few- to many-flowered up to 160 mm long, 20–30 mm diam.; rachis spotted with maroon; flowers campanulate, truncate at base, spreading or slightly cernuous, scented; pedicels up to 3 mm long. *Perianth* up to 7 mm long, 4 mm diam. at base; tube 1 mm long; outer segments ovate, up to 4 mm long, pale blue at base, cream above with pale red-brown gibbosities; inner segments 6 mm long, obovate-obtuse, cream with pale blue keel and a brownish spot near the apex; two lateral segments overlapping and concave; stamens exerted up to 10 mm long; ovary ovate, pale green; style up to 10 mm long. *Capsule* membranous, obovate, 7 mm long; seed ovoid, aril ridged, terminal, medium length.

DIAGNOSTIC CHARACTERS

Lachenalia whitehillensis is characterised by its single linear to narrow-lanceolate, conduplicate leaf which is spotted or banded on the lower surface and on the clasping base. Inflorescence racemose, narrow, short pedicels. The pale campanulate flowers are truncate at the base, the inner segments longer than the outer, and the two lateral inner ones overlapping and concave. The stamens are well exerted and the ovoid seeds have a ridged terminal aril.

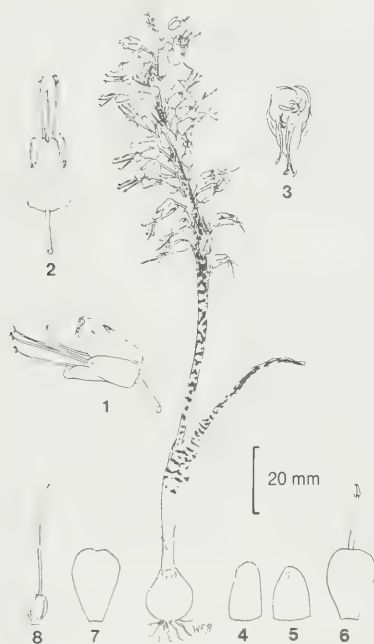


FIG. 6.

Lachenalia whitehillensis: 1. Flower side view; 2. Flower from below; 3. Flower front view; 4. Upper outer perianth segment; 5. Lateral outer perianth segment; 6. Lateral inner perianth segment and stamen; 7. Lower inner perianth segment; 8. Gynaecium (Compton 14845).

Lachenalia whitehillensis superficially resembles *L. zebrina* which occurs in the same area in the type locality, but it differs from it in the shape and colouring of the flowers, in its narrow inflorescence, and markedly in the shape of the seed which in *L. zebrina* is elongate and one of the largest in the genus.

The species has been named after the original site of the Karoo Garden near Whitehill Station, where it was collected a number of times in the sandy river silt along the banks of the Baviaans River. An earlier collection by R. Marloth made in 1920 and a recent one by W. J. Hanekon, both from the Sutherland Division, indicate that it has a much wider distribution range to be investigated.

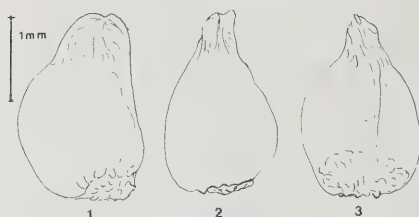


FIG. 7.

Lachenalia whitehillensis: 1. Seed side view; 2. Seed from above; 3. Seed from below (Barker 1094).

SPECIMENS EXAMINED

CAPE PROVINCE—3220 (Sutherland): Farm Uitkyk Valley, Roggeveld (-AD), Oct. 1920, *Marloth* 9712 (PRE); Hout Hoek, Sutherland (-CA), 13/9/1971, *Hanekom* 1574 (PRE).

—3320 (Montagu): Tweedside (-AB), 25/9/1931, *Compton* 3960 (BOL), 28/9/1951, *Barker* 9175 (NBG); Whitehill, Laingsburg Division (-BA), 20/9/1943, *Compton* 14845 (NBG, holo.), 21/9/1943, *Barker* 1094 (NBG); Karoo Garden, Whitehill, 17/9/1945, *Compton* 17394 (NGB); Karoo near Matjiesfontein, Oct. 1920, *Marloth* 9576 (PRE).

Lachenalia giessii Barker, sp. nov.; habitu nano bulbo tunicis multis brunis in collum productum, distinguitur.

Folia duo, variables, lineares vel lorata, flaccida, sine maculata. *Inflorescentia* racemosa; pedicelli patentes in longitudinem variables. *Flores* pusilli, pauci vel multi, albi; segmenta interiora leviter longiora vel segmenta externa; segmenta tota signis fuscatis prope apices. *Stamina* leviter exerta. *Semen* ovioideum, arillo minuto terminali, porcato.

Type Material: South West Africa/Namibia—2616 (Aus): Garub W of Aus, Lüderitz District (-CA) 1/9/1963, *H. Merxmüller* and *W. Giess* 3401 (M, iso.; PRE, iso.; WIND, holo.).

Plant 60–160 mm high, usually dwarf. *Bulb* ovate 10–30 mm diam., covered with many layers of brown tunics produced into a neck of fibres 20–50 mm long, the inner ones darker and cartilaginous, the outer becoming paler, softer and often spongy in texture; the membranous leafsheath is often longer than the neck fibres. *Leaves* 2, without markings, flaccid, and very variable in shape, from linear, conduplicate to lanceolate-lorate, 2–20 mm broad, suberect to spreading, longer than the peduncle. *Peduncle* usually shorter than the inflorescence. *Inflorescence* racemose, few to many-flowered, from 25–40 mm in diam.; pedicels spreading 2–12 mm long, elongating in the fruiting stage and spreading at right angles; bracts minute,

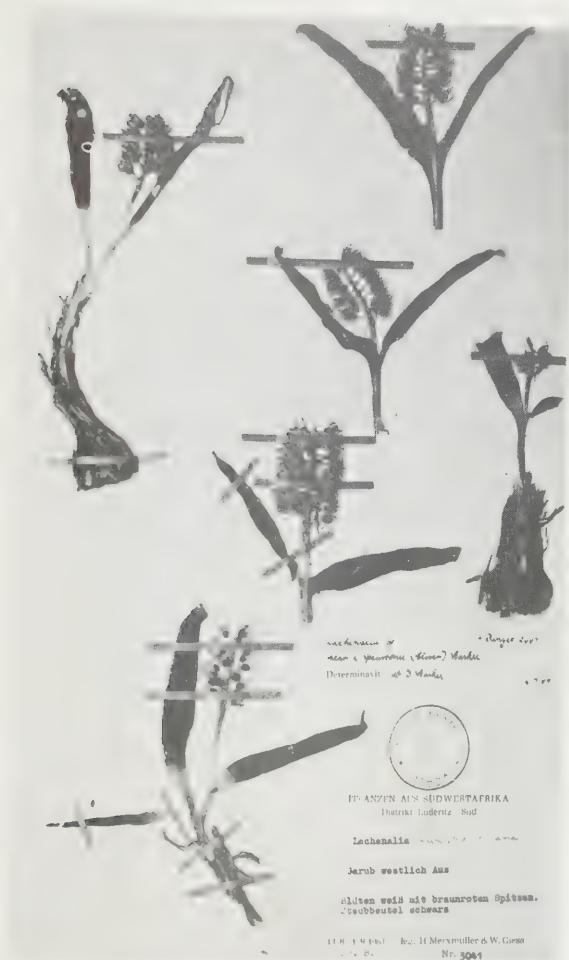


FIG. 8.

Lachenalia giessii: sheet in Botanical Research Institute, Pretoria (Merxmüller and Giess 3041, isotype).

lanceolate, membranous, white. Flowers 5–8 mm long, narrowly campanulate, tube white, 1.5 mm long, narrowing to the base; outer segments ovate-oblong, subacute, up to 6 mm long and 3 mm broad, white with reddish-purple



FIG. 9.

Lachenalia giessii: sheet in the Windhoek Herbarium (Giess Wind. 12845).

gibbosities; inner segments obovate, a little longer than the outer, white with a reddish-purple marking at the apex; stamens slightly exserted, spreading; ovary globose; style filiform, finally exserted. *Capsule* obovate, membranous with a few seeds in each loculus; seed globose, aril minutely ridged, almost obsolete.



FIG. 10.

Lachenalia giessii: 1. Seed side view; 2. Seed from above; 3. Seed from below (Giess Wind. 14656).

DIAGNOSTIC CHARACTERS

Lachenalia giessii is a dwarf species with white campanulate flowers, reminiscent of some of the dwarf *Ornithogalum* species, but each segment has a distinct dark marking at the apex. The pedicels which are usually shorter than the flowers, often lengthen considerably in the fruiting stage, and the leaves which are flaccid and without markings, vary in shape from linear, conduplicate to lanceolate. The seed which is globose, belongs to the group with an almost obsolete aril.

The distribution of *Lachenalia giessii* appears to be confined to the south western corner of South West Africa/Namibia between latitudes 26°–28°. It has not been recorded south of the Orange River, although it has been found at Schakalberg (Jakhalsberg) near the northern bank. The earliest record was made by S. Karen Regius in 1941, south of Aus, and numerous collections have been made in the area since, mainly by Mr. W. Giess, recently retired Curator of the Windhoek Herbarium, some while on expeditions with Dr. Merxmüller of München, West Germany. The species is named in honour of Mr. W. Giess in recognition of the valuable work he has done in building up the Windhoek Herbarium collections.

It appears to be most closely allied to *L. pearsonii* (Glover) Barker, a more delicate plant, which is only known from the type collection, which was made by Professor H. W. Pearson on the Percy Sladen Memorial Expedition to the Great Karasberg, South West Africa, 1912–1913. Unfortunately, no living material has been available for study or comparison of either of the two species. The seeds of *L. pearsonii* are unknown. Its flowers are smaller and the segments are described as spreading from the base, and it flowers in January. In *L. giessii* the segments appear to be erect, and it is in flower during August and September.

SPECIMENS EXAMINED

SOUTH WEST AFRICA/NAMIBIA—2616 (Aus): Farm Klein Aus, W of Aus, Lüderitz District (-CA), 9/8/1959, W. Giess and D. v. Vuuren 917 (M, PRE, WIND); Garub, W of Aus, Lüderitz-Süd, 1/9/1963, H. Merxmüller and W. Giess 3041 (M, iso.; PRE, iso.; WIND, holo.); South of Aus (-CB), Sept 1941, S. Karen Regius s.n. (WIND); North of Aus, 8/9/1973, W. Giess 12827 (M, PRE, WIND); Farm Augustfelde, 7/9/1973, W. Giess 12805 (M, PRE, WIND); Farm Kubub, 9/9/1973, W. Giess 12845 (M, PRE, WIND).

—2617 (Bethanien): Tirasberge, Bethany Dist. (-BA), 16/8/1963, H. Merxmüller and W. Giess 2857 (M, PRE, WIND).

—2716 (Witputs): Farm Witputz-Süd, Lüderitz District (DC), 24/9/1972, H. Merxmüller and W. Giess 28776 (M, PRE, WIND); Farm Spitzkop, 15/8/1976, W. Giess 14656 (M, PRE, WIND).

—2816 (Oranjemund): Schakal Mt. (-BA), 1/8/1977, M. Müller 781 (WIND).

Lachenalia moniliformis Barker, sp. nov.; bulbo parvo, producentibus stolone crassis multis, terminatis bulbilis carnosis, distinguatur.

Folia teretia viridia; usque ad octo; non amplexantia pedunculi basi. *Folia* singularia propter fascias circulares elevatas per superi duos longitudinis trientes, monilia simulans; pars basalis fasciata vel maculata, marroninescens prope basin. *Inflorescentia* racemosa. *Flores* campanulati, pusilli, opalescens; segmenta interiora vix longiora vel segmenta externa. *Stamina* manifeste exerta. *Semen* ovoideum, arillo minuto terminalis porcato.

Type Material: Cape Province—3319 (Worcester): Lemoenpoort (-CD), 22/9/1978, P. L. Perry 795 (NBG, iso.), cultivated at Worcester Karoo Garden; 5/9/1979, P. L. Perry 795 (NBG, iso.), cultivated at Compton Herbarium; 6/9/1979, P. L. Perry 795 (NBG, holo.), collected in wild habitat.

Plant 120–170 mm high (up to 330 mm when cultivated). *Bulb* globose to depressed globose, 15 mm diam., covered with a few membranous, light-brown scales, producing many bulbils on long stout stolons from the base. *Leaves* many, up to 8, erect to spreading, shorter than the peduncle, 60–160 mm long (up to 250 mm when cultivated), filiform terete, green with circular raised fleshy bands along two-thirds of their length, giving them the appearance of strings of beads, lower third banded or spotted with dark maroon, shading to magenta at the base. *Peduncle* up to 90 mm long, very slender, green, finely and densely spotted with dark maroon. *Inflorescence* racemose, 20 mm diam. (25 mm in cultivated specimens), rachis 40–80 mm long (up to 110 mm in cultivated specimens), finely spotted with maroon; flowers lax, cernuous; bracts very small and narrow lanceolate, membranous; pedicels 3–5 mm long, white, spreading. *Flowers* 5–7 mm long, 4 mm diam., truncate at the base, campanulate, tube very short, very pale blue; outer segments narrow oblong, 4–6 mm long, extreme apex recurved, very pale blue at base, shading to pale pink with reddish-brown gibbosities; inner segments only slightly longer than outer, obovate, apex subacute, recurved, white with reddish-brown markings near apex; stamens up to 11 mm long, well exerted; filaments white; ovary green, obovate, 2 mm diam.; style white up to 11 mm long, finally exerted beyond the stamens. *Capsule* obovate, membranous 4 mm diam.; seeds ovate with very short terminal ridged aril.

DIAGNOSTIC CHARACTERS

The small racemose, campanulate flowers of *Lachenalia moniliformis* resemble those of several other species in the genus, particularly those of *L. juncifolia*, which also has terete leaves, but these are two in number, while in the former species they can number up to eight. Five other species produce many leaves, but the beaded structure of the leaves in *L. moniliformis* is quite unique in the genus, and the production of bulbils on long stout stolons is also of specific importance, while its seeds fall into the group with small ridged, terminal arils.

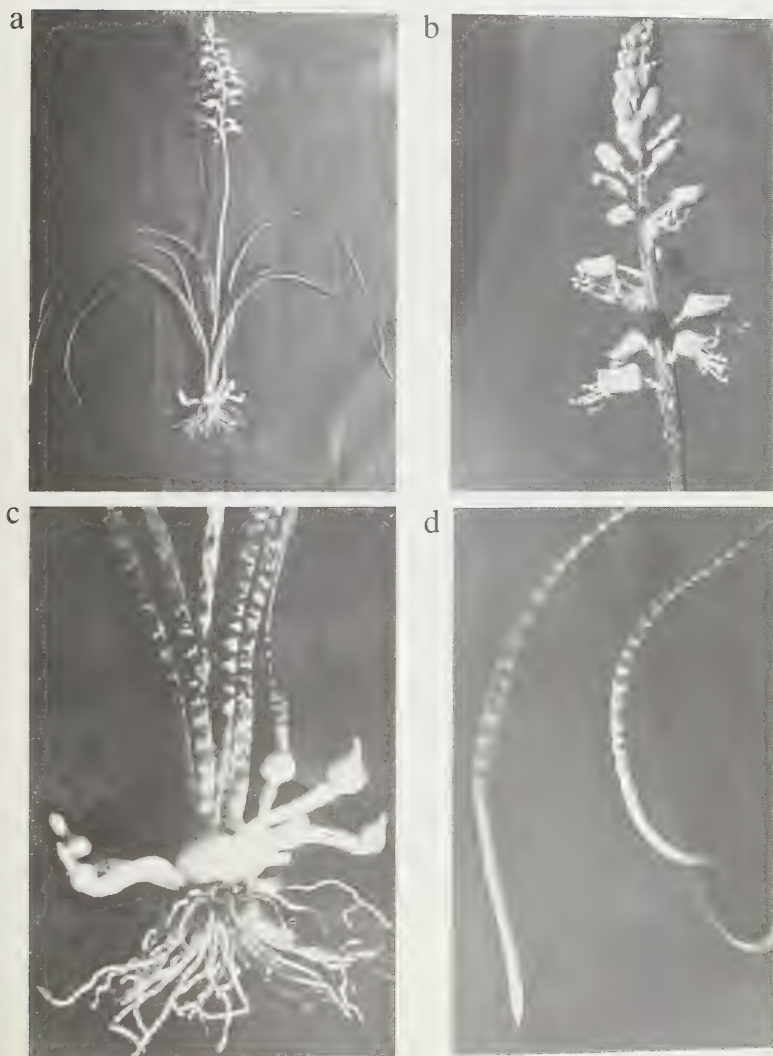


FIG. 11. a, b, c, d.

Lachenalia moniliformis: a. Whole plant; b. Inflorescence; c. Bulb with bulbils on stolons and banded leaf bases; d. Portions of two moniliform blades (Perry 795, holotype).



FIG. 12.

Lachenalia moniliformis: 1. Seed side view; 2. Seed from above; 3. Seed from below (Perry 795, holotype).

The original plant of this completely unknown species, was brought to the Compton Herbarium, on 22 September 1978, by Miss P. L. Perry of the Worcester Karoo Botanic Garden, and was collected by her at Lemoenpoort in the Worcester district. While the flowers were of a familiar type found in several species in the genus, the plant had five terete leaves. This many-leaved character is only shared by five other species, and in addition these are unique in having a structure reminiscent of a string of beads, which suggested the specific name.

As only one plant was known, a number of black and white photographs were taken, and the inflorescence and several leaves were pressed for the record. The plant flowered again on 5 Sept. 1979, this time producing eight leaves, which were much longer and more channelled above, near the base, and the beading had become less distinct.

Miss Perry visited the type locality again and was able to obtain a few seedlings to cultivate at Worcester. It was then decided to sacrifice the original plant to serve as a type. On lifting the bulb, it was found to be comparatively small, but it had produced a number of stout stolons from its base, which were terminated by well-developed bulbils, one of which had already developed a single leaf.

On 7 September 1979, after a very dry season in the area, the original site was visited again, and after a search in a somewhat sandy eroded area, a few plants were located in flower. Two of these plants were preserved as typical examples of wild specimens, and two were planted and cross-pollinated for seed.

SPECIMENS EXAMINED

CAPE PROVINCE—3319 (Worcester): Lemoenpoort (-CD), 22/9/1978, P. L. Perry 795 (NBG, iso.), cultivated at Worcester Karoo Garden; 5/9/1979, P. L. Perry (NBG, iso.), cultivated at Compton Herbarium; 6/9/1979, P. L. Perry 795 (NBG, holo.), wild specimens.

Lachenalia ameliae Barker, sp. nov.; habitu nano distinguitur.

Bulbus tunicis paucis, pallidis brunneis in collum productum. *Folia* unum vel duo, ovata vel lanceolata; lamina atroviridis, supra glabra vel pilis brevibus vel longis, interdum limitatus ad margines; pagina inferna marronina; basis amplexans, alba, subtiliter marronina punctata. *Inflorescentia* spicata. *Flores* cremicolores prope basin, palide flavescens tumoribus viridibus in segmentis externis; segmenta interiora longiora vel segmenta externa, eburnea lucentia; apices purpurei tincti. *Stamina* segmenta intima aequantia. *Semen* globosus, arillo porcato.

Type Material: Cape Province—3320 (Montagu): 5 km S of Bloutoring Station (-AD), 7/9/1979, C. Malan 90 (BOL, iso.; NBG, holo.; PRE, iso.).

Plant dwarf, 40–115 mm high. *Bulb* globose to depressed-globose, 8–15 mm diam.; covered with a few membranous light-brown tunics produced into a short neck. *Leaves* 1–2, blade 5–20 mm broad, ovate-acute to lanceolate, spreading to recurved, upper surface smooth or with few to many short to long hairs sometimes confined to the margin only, lower surface dark maroon, clasping base pale, finely spotted with magenta. *Inflorescence* spicate, 20–80 mm long, peduncle 10–60 mm long, bracts minute; flowers 12–14 mm long, sessile, spreading, narrow-urceolate, narrowed toward the base, tube cream, 4 mm long, outer segments 6 mm long, ovate-acute, cream at base shading to pale yellow above, with pale green gibbositities, and sometimes with a narrow maroon central stripe, inner segments up to 10 mm long, 3–4 mm broad, longer than the outer, the two upper overlapping, all cream to pale yellow with a central green keel, apices spreading to recurved, occasionally tinged with pale magenta at the apex as in the type collection, or with distinct dark purple tips; stamens finally as long as the inner segments, decurved; ovary 3 mm long, 2 mm diam., pale green, style cream, finally a little longer than the stamens. *Capsule* membranous, ovoid, 5 mm diam.; seeds ovoid with ridged aril of medium length.

DIAGNOSTIC CHARACTERS

Lachenalia ameliae is characterised by its dwarf habit, ovate to lanceolate leaves, dark green on upper surface with or without long or short hairs, the lower surface maroon. The inflorescence is spicate, the flowers narrow-urceolate, cream and yellow, the inner segments longer, the apices spreading to recurved, pale magenta to dark purple.

The earliest discovery of this species was made by Dr. R. Marloth at Zwartkoppies near Spes Bona in the Ceres district, in September 1921, and the specimens are preserved in the National Herbarium, Pretoria. This was followed by a collection by Professor R. H. Compton at Gansfontein in the

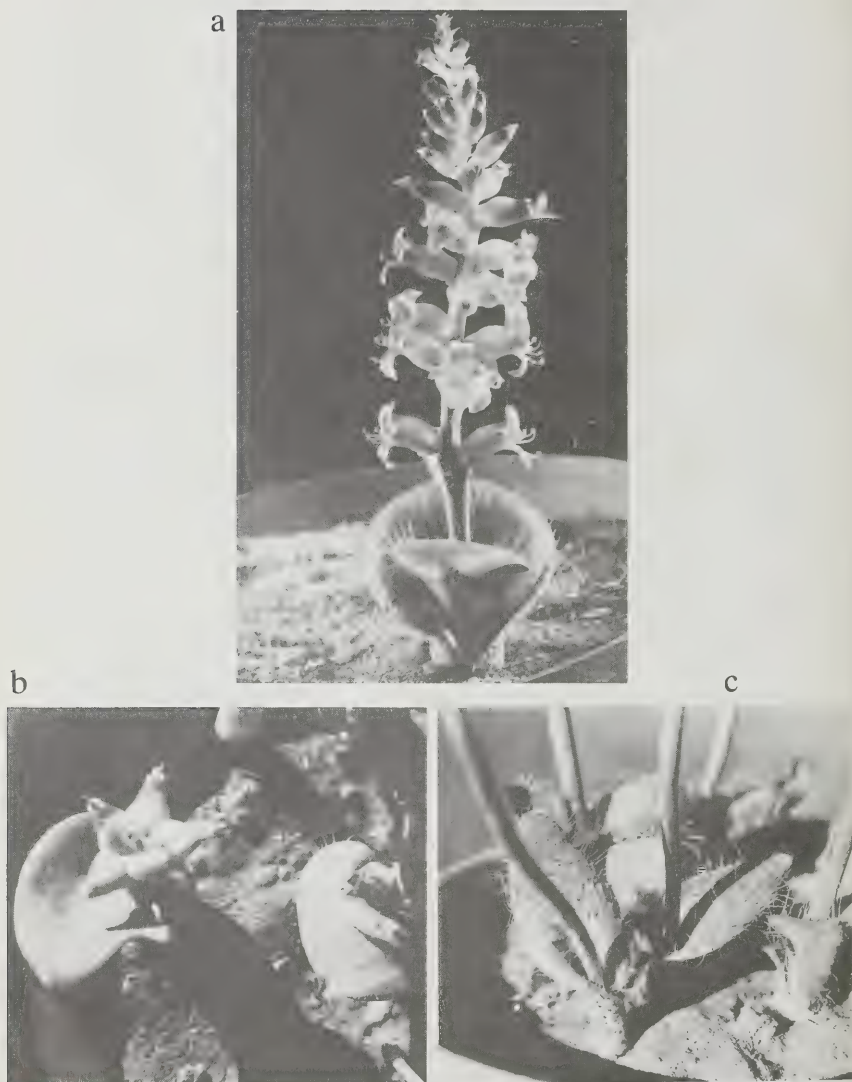


FIG. 13. a, b, c.

Lachenalia ameliae: a. Whole plant (Mauve, Oliver, Malan 206, PRE); b. Left plant with smooth leaf, right plant with few marginal hairs; c. Bases of plants with leaves with hairs on leaf surfaces (Malan 90, holotype, NBG).

Ceres District in August 1935, and another by G. J. Lewis and E. Esterhuyzen about ten miles from Montagu on the road to Ladismith in September 1935. These are both in the Bolus Herbarium collection. Most of the leaves of all these collections are incomplete, but they usually appear to be lanceolate, with a dense covering of short hairs on the upper surface, while the flowers have distinct dark purple tips to the inner segments.

More recent collections were made five kilometres south of Bloutoring Station, first by Mrs. A. A. Mauve, accompanied by I. Oliver and C. Malan, in September 1974, when three living specimens were made available for study with some ripe seeds. The same locality was visited in September 1979 by C. Malan and W. F. Barker, when it was possible to study the living plants in their natural habitat. They were found growing in red sandy clay on windswept flats, usually on humps with small karoo plants holding the soil. The shape of the leaves in this area proved to vary considerably, from broadly ovate to lanceolate, and the upper surface of the dark green blade was either quite smooth or the integument consisted of hairs of varying length and density covering the surface, or confined to the margins only.

None of the flowers examined in this locality had dark purple tips to the inner segments, but in some cases the extreme tips were tinged with magenta. The seeds available in both groups were similar in character, with small ridged arils.



FIG. 14.

Lachenalia ameliae: 1. Seed side view; 2. Seed from above; 3. Seed from below (Malan 90, holotype, NBG).

The species has been named in honour of Mrs. A. A. Mauve who brought the first living specimens from the type locality to my notice, and has contributed so much to our knowledge of the Liliaceae.

SPECIMENS EXAMINED

CAPE PROVINCE—3219 (Wupperthal): Zwartkoppies near spes Bona (-AD), Sept. 1921, Marloth 10479 (PRE); Gansfontein (-DD), 26/8/1935, Compton 5872 (BOL).
—3320 (Montagu): Between Bloutoring station and Withoogte, Touwsrivier (-AD), 9/1974, A. A. Mauve, I. Oliver & C. Malan 206 (NBG); 5 km S of Bloutoring Sta-

tion, 7/9/1979, *C. Malan 90* (BOL, iso.; NBG, holo.; PRE, iso.); About ten miles from Montagu along old road to Ladismith, Sept. 1935 (fruiting), *Lewis & Esterhuy-sen* (BOL).

ACKNOWLEDGEMENTS

I am much indebted to Dr. J. P. Rourke for the Latin translations of the diagnoses; to Miss P. L. Perry for bringing *L. moniliformis* to my notice, and for taking me to the type locality, and also to Miss C. Malan for arranging an expedition to the type locality of *L. ameliae*.